Source Water Assessment Program (SWAP) Report for Hampshire-Franklin Children's Day Care

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

? Inventory land uses within the recharge areas of all public water supply sources;

? Assess the susceptibility of drinking water sources to contamination from these land uses; and

? Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

Date Prepared: December 3, 2001

Table 1: Public Water System (PWS) Information

PWS Name	**Hampshire-Franklin Children's Day Care**
PWS Address	**59 Long Plain Road, State Route 63**
City/Town	**Leverett, Massachusetts**
PWS ID Number	**1154004**
Local Contact	**Mr. Thomas Wildman-Hanlon**
Phone Number	**413-548-9674**

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	1154001-01G	128	434	Moderate

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential contaminant sources, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential contaminant sources, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

Description of the Water System

The Hampshire-Franklin Children's Day Care is a rural, childcare facility located on the east side of Long Plain Road, State Route 63 in Leverett. The population of children and staff is approximately 35 people per day and is served by a single potable supply well (Well #1) located west of the building. The facility's heat and hot water are both electric.

The well has a Zone I protective radius of 100 feet and an Interim Wellhead Protection Area (IWPA) radius of 416 feet. The protective radii were based on the average daily-metered water use for the two highest months on record. Please refer to the attached map that shows the Zone I and IWPA. The Zone I is the area immediately around the wellhead where no activity, other than that related to the water supply, is allowed to take place. The IWPA is a larger area that likely contributes water to the wellhead. The

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by **the** water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

IWPA is only an interim protection area; the actual area of contribution to the wellhead may be larger or smaller. The Hampshire-Franklin Day Care facility does have activities within the Zone I that are not related to the water supply and is therefore non-conforming to the Zone I restrictions.

The 6-inch diameter well is reportedly installed in 1987 and drilled to a depth of 520 feet below ground with 20 feet of casing grouted into place. The bedrock geological map shows complex structure in the vicinity of the school and describes various bedrock formations of sulfidic schist, amphibolite and gneiss. The drilling record of the well indicates very shallow depth to bedrock. Wells drilled in these conditions are considered highly vulnerable to potential contamination from the ground surface because there is no significant hydrogeologic barrier, such as clay, to prevent surface contamination from migrating into the bedrock aquifer. The water from the well does not require and is, at the time this report was prepared, not treated. You may request additional information regarding the quality of the water, from the local contact listed in Table 1.

Please refer to the following section, attached maps of the Zone Is and IWPAs and Table 2 for additional assessment information.

2. Discussion of Land Uses in the Protection Areas

During the assessment, several land uses and activities were identified within the drinking water supply protection areas that are potential sources of contamination.

Key issues include:

1. **Nonconforming activities in Zone I**
2. **Household hazardous materials storage**
3. **Septic systems**
4. **Parking and roadway**

The overall ranking of susceptibility to contamination for the well is moderate, based on the presence of at several moderate threat land uses or activities in the Zone I and IWPA, as seen in Table 2.

1. Nonconforming activities in Zone I – Currently, the well does not meet DEP's restrictions, which only allow water supply related activities in Zone I. The facility's Zone I contains buildings and parking areas. The storage sheds in front and behind the

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Septic System components	No	Yes	Moderate	Refer to the attached septic system fact sheet.
Household hazardous materials storage	Yes	Yes	Moderate	Dispose of unused materials, use containment
Parking area and roadway	Yes	Yes	Moderate	Storm water drains away from the wellhead
Low density residential	Yes	Yes	Moderate	School facility and residential yards

- **-For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400-foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

facility contains household hazardous materials. Also note that the well cap was not secure at the time of the site visit. The public water supplier does not own and/or control all land encompassed by the Zone 1. Please be aware that systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems.

Recommendations:

- ✓ Replace the cap with a secure, watertight cap and grade the area around the wellhead so that water does not flow to or pool around the wellhead.
- ✓ Remove all household hazardous materials form the Zone I. At a minimum, supply secondary containment for all hazardous materials such as gasoline (for the lawn mower) and paint or stain.
- ✓ Monitor activities within the Zone I and minimize activities, as is reasonable.
- ✓ Contact neighbors to be sure they are aware they are within the Zone I of the facility's well and provide information on household BMPs for household hazardous waste, septic system management and lawn care.

2. Septic system components in the IWPA - The septic systems for the facility and several neighboring residential homes are within the IWPA. If a septic system fails or is not properly maintained it is a potential source of microbial contamination. Improper disposal of household hazardous chemicals or petroleum products to septic systems are also potential sources of contamination to the groundwater.

Recommendations:

- ✓ Staff should be instructed on the proper disposal of spent household chemicals.
- ✓ Septic system components should be inspected and maintained on a regular basis.

3. Improper storage of hazardous household materials – Paint, wood stains and varnishes were found stored on open shelves in a shed behind the facility.

Recommendations:

- ✓ Store in area with a sealed floor and within stable, enclosed cabinets.
- ✓ Provide secondary containment for storage of potentially hazardous items.

4. Parking and roadway - The parking area is within the Zone I and the road is within the IWPA of the well. The road is topographically downgradient from the wellhead and the drainage on the road is controlled through a stormwater collecting system. Grading around the wellhead should direct flow away from the well.

Recommendations:

- ✓ Use minimal road salt and deicers.
- ✓ Monitor the parking lot for spills and leaks.
- ✓ Establish a buffer area prohibiting parking immediately adjacent to the well.
- ✓ Be sure that snow is not plowed on top of the wellhead.

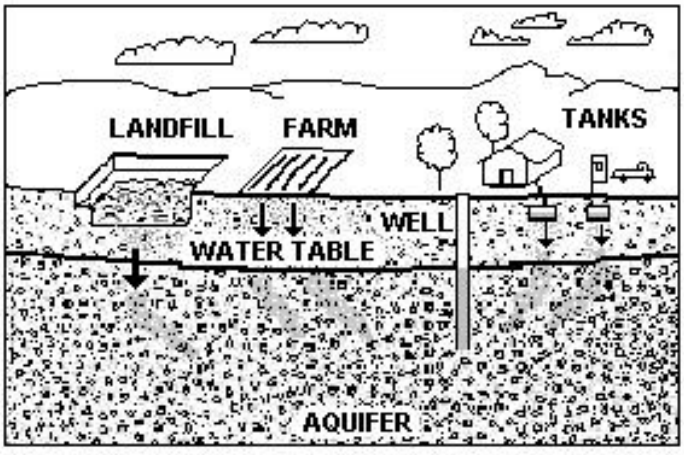

Figure 1: Example of how a well could become contaminated by different land uses and activities.

Other activities noted during the site visit were residential buildings. Generally a daycare facility and residential uses pose minimal threat to a water supply provide that best management practices are used with respect to management of household hazardous materials, lawn care chemicals and septic disposal.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well's susceptibility to contamination. The Hampshire-Franklin Day Care is commended for current protection efforts (such as the signs on

For More Information:

Contact Catherine V. Skiba in DEP's Springfield Regional Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at: www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been provided to the public water supplier, town boards, the town library and the local media.

the sinks) and encouraged to review and adopt the key recommendations listed above and the following additional measures.

Priority Issues:

- ✓ Replace the well cap with a watertight, sealed cap.

Zone I and IWPA:

- ✓ Prohibit parking in the space immediately adjacent to the wellhead.
- ✓ Keep any new non-water supply activities out of the Zone I.
- ✓ Conduct regular inspections of the Zone I and monitor the area for spills and leaks.
- ✓ Post drinking water supply signs at key location such along the access road and in the turnaround near the building, away from the well.
- ✓ Provide information to staff and immediate neighbors about the potential hazards of household chemicals, lawn care chemicals and fertilizers.
- ✓ Continue the current practice of not using fertilizer or pesticides.
- ✓ Use Best Management Practices (BMPs) for household hazardous products.

Facilities Management:

- ✓ Septic system components should be maintained on a regular basis. Refer to the appendices for more information regarding septic systems.
- ✓ Do not allow snow to be piled on top of the wellhead.

Planning:

- ✓ Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a potential contaminant threat inventory to assist in setting priorities, focusing inspections, and creating educational activities.
- ✓ Request that your IWPA be incorporated into the Leverett Aquifer Protection District.

Funding:

The Department's Wellhead Protection Grant Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the "Wellhead Protection Grant Program". For additional information, please refer to the attached program fact sheet. Please note that each program year, on or about May 1 the Department posts a new Request for Response (RFR), grant application form. Generally, the applications are due on or about June 30. Other funding opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation" at http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Fact sheet
- Your Septic System Brochure
- Grant Program Fact Sheet